

6-2: Rational Power Functions

Warm-up: The frequencies of the notes beginning with A above middle C are usually:

$$A = 440, A\# = 440 \cdot 2^{\frac{1}{12}}, B = 440 \cdot 2^{\frac{2}{12}}, C = 440 \cdot 2^{\frac{3}{12}}, C\# = 440 \cdot 2^{\frac{4}{12}}, D = 440 \cdot 2^{\frac{5}{12}}, \dots$$

1. Calculate the frequencies (to the nearest integer) of A#, B, C, C#, and D.
2. Write an expression for the frequency of the note n notes above A.
3. Use the expression you have written to find the frequency of the G that is two notes below A.

Example 1: Rewrite $x^{\frac{4}{7}}$ as a radical.

Rational Exponent Theorem:

Postulates for Powers:

Zero Exponent Theorem:

Negative Exponent Theorem:

Example 2: Evaluate $64^{\frac{2}{3}}$.

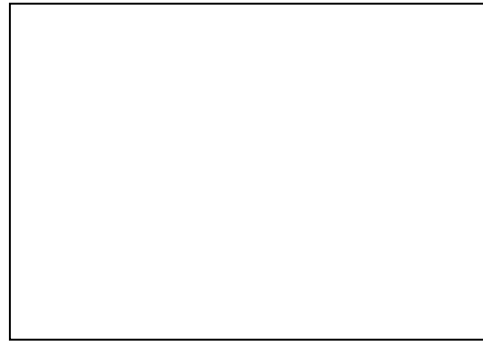
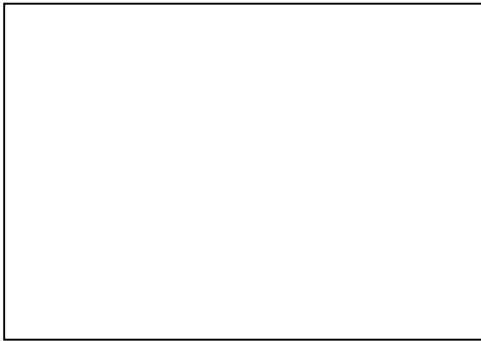
Example 3: Evaluate $32^{\frac{-3}{5}}$.

Example 4: Let $y = h(x) = x^{\frac{3}{2}}$.

a. Find an equation for the inverse of h .

b. Is the inverse a function?

c. Plot h and its inverse.



Homework:

"Many of life's failures are people who didn't realize how close they were to success when they gave up." - Thomas Edison